Oak Ridge Operations Office
Environmental Management

Accelerating Cleanup:
Focus on 2006

Discussion Draft
Executive Summary

June 1997

EXECUTIVE SUMMARY

ES.1 OPERATIONS OFFICE OVERVIEW

The U.S. Department of Energy–Oak Ridge Operations (DOE-ORO) has incorporated aggressive management and productivity goals into its planning for the accelerated completion of the Environmental Management (EM) mission. These goals have resulted in a reduction from prior plans of $20B and several decades. Key to the accomplishment of these goals are the following assumptions.

Reindustrialization will be the primary method of accomplishment for decontamination and decommissioning (D&D) of the East Tennessee Technology Park (ETTP)

Reindustrialization of ETTP (formerly the Oak Ridge K-25 Site) is the method of accomplishing D&D that will result in the most timely and cost-effective transition of the site from DOE and its prime contractors to the private sector. ETTP's reindustrialization will save approximately $3.2B of the Baseline Environmental Management Report (BEMR) estimates. Through reindustrialization, by 2006, ETTP will be an active, growing industrial park requiring minimal federal investment for sustainment. The park will become a national centerpiece for promoting the community and commercial industry's deployment of DOE's assets and facilities, while at the same time reducing federal costs.

For reindustrialization to be successful, several immediate actions must be accomplished. One most time critical to the current schedule is DOE–Headquarters' approval of the British Nuclear Fuels, Limited, contract by June 1997. If this contract is not approved, the reindustrialization initiatives for increased cost efficiencies will not be realized and the ORO EM planning projections will have to be revised to reflect a significantly more costly approach that will postpone the D&D of the ETTP for several years.

The on-site waste management facility will be operational on the Oak Ridge Reservation (ORR) in Fiscal Year (FY) 2000 for wastes resulting from Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions

The scope of the on-site waste management facility includes the construction and operation of a facility to dispose of CERCLA waste generated on the ORR. The disposal facility will be capable of receiving projected volumes from future environmental restoration (including D&D) waste streams and will be designed to meet applicable federal, state, and local regulations.

The watershed approach will be implemented for assessment and cleanup of the ORR

The watershed approach will save approximately $7B of the BEMR estimates and will result in the remedial decision by FY 2000. The results of the widespread characterization activities show that the optimal solution for cleanup of the ORR needs to be determined at the watershed level to ensure that decisions selected within a geographical area are consistent with all known release site problems and future planned use of the area. The White Oak Creek Watershed is an example of this concept of

combining release sites and subprojects within the same watershed into one project. (A watershed is a defined geographic area encompassing a surface water drainage basin.)

Aggressive, enhanced-performance assumptions (efficiency greater than 33%) will be incorporated into the plan

DOE-ORO is planning an aggressive, cumulative-average, enhanced-performance (efficiency) of 33%. Major components of the cumulative average efficiency include transition to a management and integrating (M&I) contract; full projectization of work scope; focused program management; reduced construction costs; surveillance and maintenance (S&M) efficiencies; reduced landlord costs; and consolidation of waste, storage, and coordination activities.

DOE-ORO has had extensive stakeholder involvement for its planning effort. A series of public meetings was held at which the planning assumptions and results of project sequencing were discussed. Issues were documented, and path forwards for resolution were identified. The public meetings were collaborative and cooperative.

This summary and supporting documents build upon the foundation established through earlier planning efforts, resulting in an integrated EM baseline that will be accomplished decades earlier and for several billion dollars less than previously planned.

This Discussion Draft is the culmination of extensive planning efforts, which will result in the establishment of the Oak Ridge EM Baseline, after appropriate dialogue and comment by the stakeholders and regulators. It should be noted that the refinement of the DOE-ORO Discussion Draft has resulted in differences between this Discussion Draft and the Project Baseline Summaries (PBSs). These differences will be resolved during the next update of the PBSs.

ES.1.1 Scope of the Plan

The DOE-ORO EM Discussion Draft addresses activities at eight primary sites. Table ES.1 lists the sites included in the Discussion Draft.

Table ES.1. Oak Ridge Operations sites (excluding the Formerly Utilized Sites Remedial Action Program)

City, state	Site
Oak Ridge, TN	East Tennessee Technology Park (formerly the Oak Ridge K-25 Site) Oak Ridge Y-12 Plant Oak Ridge National Laboratory Oak Ridge Reservation Boundary Sites Oak Ridge Reservation off-site (nonfederal) areas
Paducah, KY	Paducah Gaseous Diffusion Plant
Portsmouth, OH	Portsmouth Gaseous Diffusion Plant
St. Charles, MO	Weldon Spring Site

EM activities contained in this plan include the following:

- environmental restoration, which protects human health and the environment by addressing remediation of buried wastes, contaminated soil, groundwater, surface water, structures, and other materials at EM sites;
- waste management, which includes the storage, treatment, and disposal of waste in a safe and secure manner; and
- Nuclear Materials Facilities Stabilization, which (1) provides the orderly transition of contaminated installations and facilities from other departmental program organizations to the EM Program and (2) manages spent nuclear fuel (SNF).

Also included in the Discussion Draft are program management and support activities and Landlord Program responsibilities for ETTP.

The following are not included in the Oak Ridge Discussion Draft:

- Sites included in the Formerly Utilized Sites Remedial Action Program (these are included in a separate Discussion Draft for sites across the nation managed by DOE-ORO
- Hazardous Waste Remedial Action Program support for DOE-Headquarters (DOE-HQ)
- The National Technology Development, Transportation, Analytical Laboratory, and Emergency Preparedness programs located in Oak Ridge and managed by DOE-HQ
- Facilities within Oak Ridge that are currently managed by other DOE Programs—such as defense programs, Energy Research, and Nuclear Energy—and facilities leased at Portsmouth Gaseous Diffusion Plant (PORTS) and Paducah Gaseous Diffusion Plant (PGDP) to the U.S. Enrichment Corporation. (Specifically, these are facilities from the Oak Ridge Y-12 Plant "footprint reduction;" D&D of reindustrialized facilities at ETTP; inactive facilities not in the EM Program at Oak Ridge National Laboratory, PORTS, PGDP, the Y-12 Plant, and the Oak Ridge Institute for Science and Education; Nuclear Energy facilities at PGDP; and subsidiary U.S. Enrichment Corporation facilities.)

This Discussion Draft does not address acceptance of new facilities into the EM Program. A DOE Secretarial Policy Decision is expected to address how DOE will handle "excess" or "transitioning" facilities. This decision is expected between the issue dates of the Discussion Draft and the final plan. The scope will be rebaselined as the need for stabilization and D&D of these facilities arises.

DOE acknowledges its legal liability for cleanup. It should be reemphasized that the major assumptions (e.g., waste transition to generators, reindustrialization, watershed Records of Decision, and enhanced performance) impact budget requirements. If the assumptions are not achieved, then significant, additional budget and completion time will be needed.

ES.2 SITE 2006 STATUS AND ASSOCIATED FUNDING PROFILE

The EM Program at ORO has been planned and scheduled for two funding cases. These cases are derived from the potential national EM funding level alternatives of $6 billion (the $6B Case or High case) or $5.5 billion (the $5.5B Case or Low case).

ES.2.1 End State

The end states for the two funding cases are the same and are as follows:

- Weldon Spring will be released for unrestricted use, except for approximately 62 acres, which will be occupied by the disposal cell. The disposal cell will require institutional controls.
- PORTS and PGDP will continue to operate gaseous diffusion plants, and remediation will be sufficient for operation to continue. Final remedial action decisions on some units will be deferred until after D&D of the sites, at which time further remedial action may be required. Some areas, such as capped burial grounds and groundwater treatment systems, will be subject to long-term postclosure or postremediation institutional controls.
- Approximately 4% of the ORR will require institutional controls following remediation. These areas, such as burial grounds, are being isolated hydrologically. The remaining 96% of the reservation will not require institutional controls and will be available for a wide variety of uses. Legacy waste will be disposed off site.

Table ES.2 lists the future land use assumptions for each site.

Table ES.2. Future land use assumptions

Site	Future use[a]
ORR	Controlled access (waste management areas), industrial, open space (conservation areas)
ORR off-site areas	Industrial, recreational (conservation areas)
PGDP	Industrial, recreational
PORTS	Industrial, recreational
Weldon Spring Site	Unrestricted or recreational use

[a] For the ORR, the future use categories in parentheses are as shown in the Management Action Process Document.

ES.2.2 Comparison of the Two Cases

Both funding cases achieve the same end state, but the $6B Case achieves them sooner (see Table ES.3, Fig. ES.1). Figure ES.2 and Table ES.4 show the required funding for the $5.5B Case.

Table ES.3. Summary of funding impacts on end date

Site	$6B Case end date	$5.5B Case end date
ORR	2012	2015
PGDP	2010	2012
PORTS	2005	2006
Weldon Spring	2004	2005

ES.2.3 Scope Complete by 2006

Work scope has been accelerated as a result of the management and productivity goals. Consequently, much more work is planned for completion by 2006 than in the BEMR.

On the ORR, legacy transuranic (TRU) waste will be treated and ready for final off-site shipments by 2006. Legacy mixed low-level waste treatment will be complete, except for 1013 m^3, and legacy low-level waste will be 44% disposed. The watershed Records of Decision and all assessments of release sites will be complete; remedial actions will be complete on 262 of 314 release sites. D&D of 137 of 201 facilities will be complete. Usable facilities at ETTP will be leased, and all unusable buildings will be demolished or stabilized as necessary to abandon in-place (except for three process buildings).

At PGDP and PORTS, all legacy waste will be shipped off site for disposal by FY 2006 (except for some TRU waste at PGDP). Assessments and agency-required remedial actions will be complete at Portsmouth. At Paducah, all immediate-risk remedial actions will be complete and all hot spots and suspected sources of off-site contamination remediated. Weldon Spring will be complete.

ES.2.4 Risk

The sequencing of activities depends on risk. This ensures that subprojects with the highest risk rankings are completed as soon as possible, thereby expediting overall risk reduction. The majority of risk reduction will be completed by 2006. However, due to the logical sequencing of work, such as the completion of source actions prior to addressing receiving media, not all activities will be complete by FY 2006. The risk reduction performance measure included in Sect. C.1 of the PBSs gives an indication of the relative decrease in risk associated with the Discussion Draft.

ES.2.5 Compliance

DOE-ORO's intention is to be in full compliance with applicable regulatory requirements. Achievement of compliance at the $5.5B funding level will require that DOE-ORO successfully integrate unknown and currently developed technologies, efficiencies related to undefined complex-wide integration, more aggressive reengineering initiatives, and significant undefined efficiencies. DOE-ORO will work with the stakeholders, regulators, and contractors to implement such initiatives.

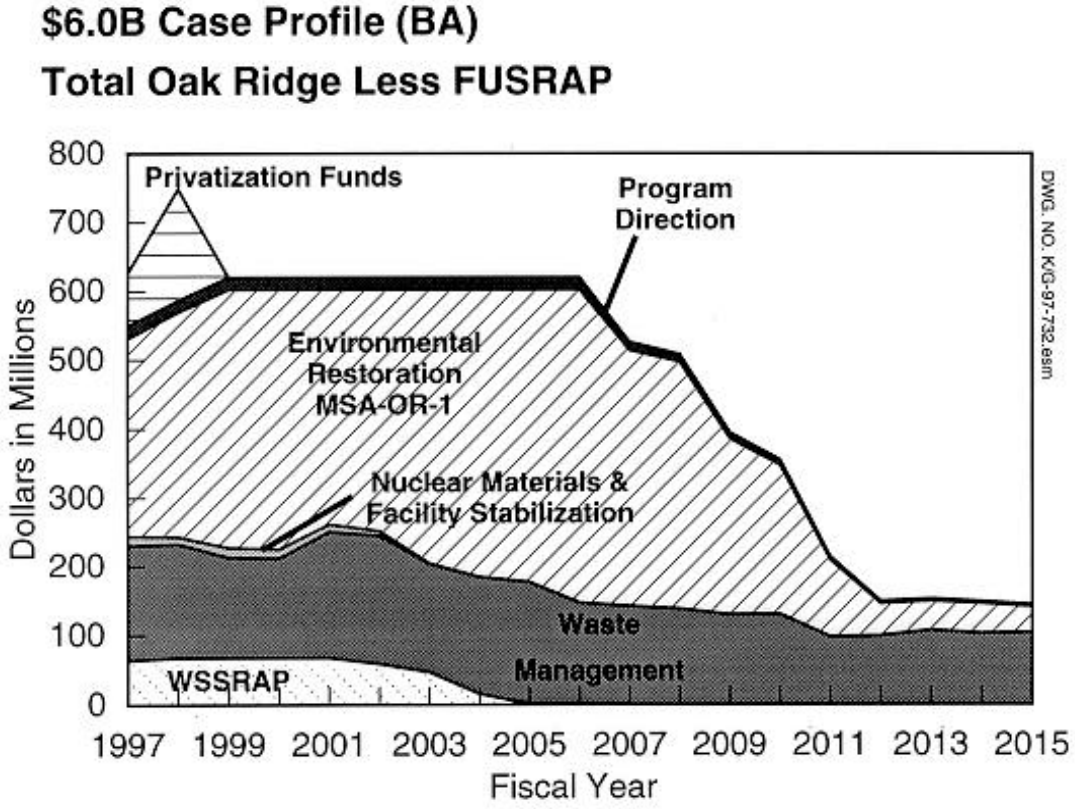

Fig. ES.1. $6B Case funding profile.

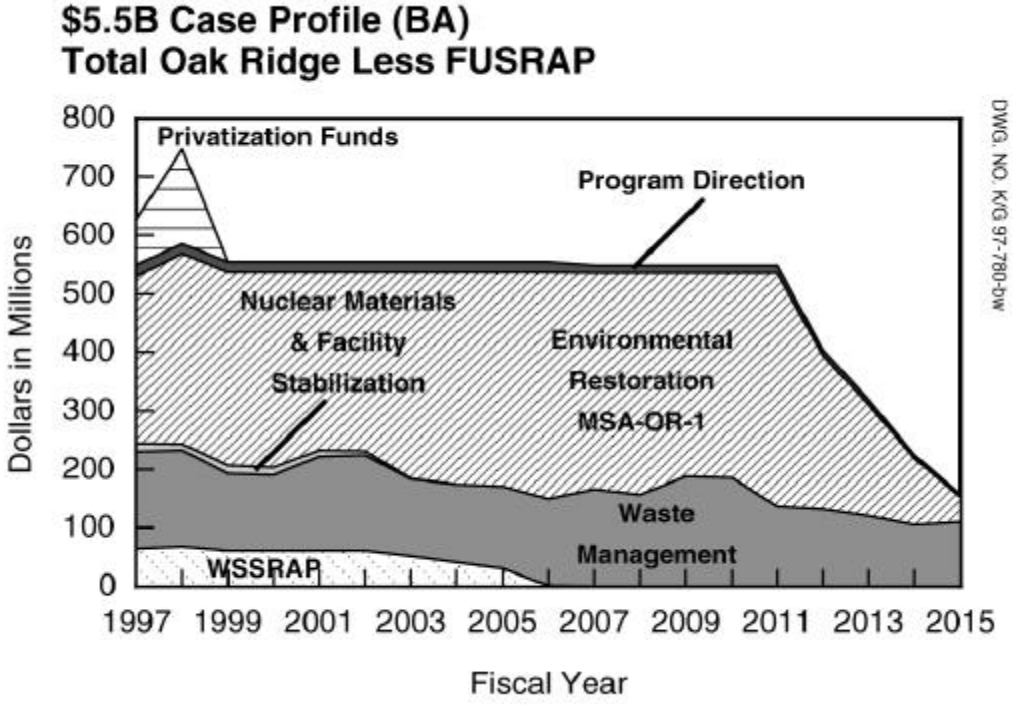

Fig. ES.2. $5.5B Case funding profile.

DOE-ORO will be able to achieve compliance with applicable regulatory requirements at the $6B funding level.

ES.2.6 Management and Productivity Goals

This Discussion Draft includes a cumulative, average, enhanced-performance (efficiency) of 33%. Specific efficiency examples include the following:

- **decreased remedial action S&M estimates of 5% per year and D&D S&M estimates of 10% per year through FY 2000,** achieved by (1) reducing the number of surveillances, (2) adding access controls, and (3) decreasing the S&M scope;
- **decreased program management costs,** achieved by reducing scope and creating efficiencies through outsourcing and more efficient organization;
- **decreased landlord costs,** achieved through outsourcing and a reduction in general-use facilities and utility systems (through abandonment in place);
- **decreased project costs,** achieved by adopting an M&I approach using industry standards for remediation work (use of private-industry percentages for design and construction management greatly decreased the estimate);
- **decreased construction costs of 10%,** achieved through increased use of competition and subcontractors to provide support (e.g., health and safety) instead of the M&O contractors;
- **decreased waste management costs,** achieved by incentivization of work scope; and
- **decreased low-level- and mixed-waste storage tasks by 2% per year,** achieved through declining inventory.

Additional savings embedded in the Discussion Draft but not included in the minimum 33% cumulative-average efficiency are the following:

- ETTP reindustrialization,
- new remediation strategies,
- cost reduction support, and
- technology development.

These activities represent an additional life-cycle savings in excess of $3.5B from previous planning baselines.

ES.2.7 Comparison of BEMR and Discussion Draft

Figure ES.3 compares BEMR funding requirements to the two funding scenarios. The BEMR was prepared in response to a congressional mandate stated in the 1994 National Defense Authorization Act to estimate the total cost of the EM Program. The primary mortgage reduction

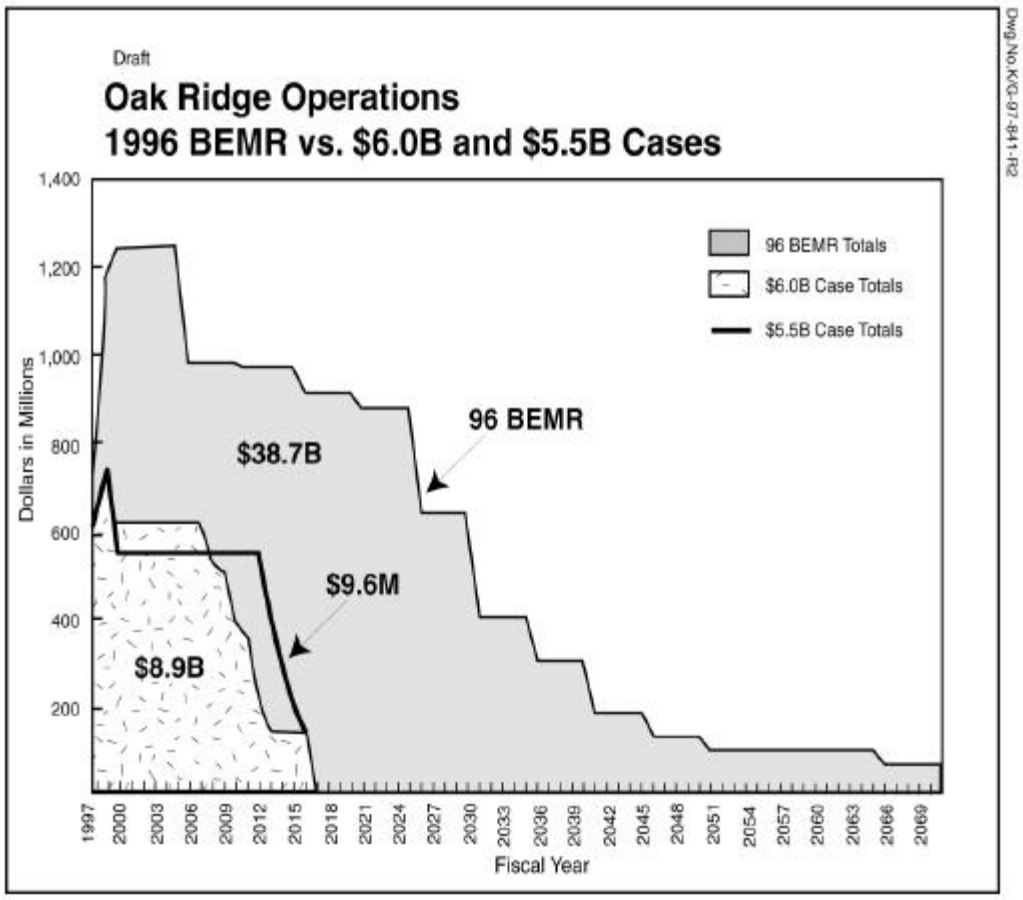

Fig. ES.3. Funding chart comparing the BEMR and the Discussion Draft.

efforts for the EM Program were planned in the transition from the BEMR to the Discussion Draft. Primary mortgage reduction and other efforts realized in the Discussion Draft include the following:

- Acceleration
  - — Accelerated site schedules reduce support and S&M costs.
- Efficiency
  - — Disposition of inventoried low-level and mixed waste will be complete by 2008.
  - — Commercial disposal of higher-concentration materials will be achieved, while the BEMR assumes limited use of off-site disposal.
  - — Limited waste treatment is assumed, while the BEMR assumes treatment, where feasible.
  - — Construction of an on-site waste management facility is scheduled.

  - — Deployment of innovative technologies for several projects over the next 1–5 years will reduce costs.
  - — Re-engineering and privatization initiatives, including increased use of fixed-price and incentive contracts, will be employed.
- Regulatory compliance
  - — Characterization of contaminated areas will be based upon the use of a watershed Record of Decision strategy that will reduce the number of and time for assessments and will use existing data, rather than "full" characterization, as assumed in the BEMR.
  - — The Discussion Draft focuses on a more "brownfield" cleanup approach, while one of the scenarios in the 1996 BEMR assumed action levels based on several "greenfield" approaches. The Discussion Draft approach requires land stewardship and/or future use restrictions, while the BEMR assumes less restrictive use.
  - — For PGDP, the Discussion Draft assumes that regulators will allow use of the federal Toxic Substances Control Act (TSCA) PCB industrial cleanup level of 25 ppm for soil.
  - — For PORTS, the Discussion Draft assumes that the federal TSCA PCB industrial cleanup level for soil and sediment will be 10–25 ppm. Radiological contaminants will be cleaned up to 30 pCi per gram or as low as reasonably achievable, whichever is greater.
- K-25 (ETTP) Reindustrialization
  - — The BEMR assumed decommissioning of all facilities at ETTP. The ETTP reindustrialization effort assumed in the Discussion Draft minimizes the number of facilities requiring decommissioning.
  - — All ETTP leasable facilities will be leased by 2006. All unleasable facilities will be decommissioned.
  - — The decommissioning and reindustrialization of ETTP include two large projects that will result in the D&D of the five major gaseous diffusion process buildings. These are referred to as the Three-Building (K-29/K-31/K-33) Project and the Two-Building (K-25/K-27) Project. Both projects are expected to involve metal recycling to offset costs. The success of the recycling effort depends on the placement of fixed-price contracts (for both projects) that assign recycle risks such as revenue recovery to the contractor(s). Release of metals into free commerce will be accomplished under existing Nuclear Regulatory Commission regulations (Reg. Guide 1.86). If a free-release criteria for volumetrically contaminated metals is established, costs may be further reduced.
- Transfers
  - — The Discussion Draft excludes several facilities included in the BEMR for PGDP and PORTS. The Discussion Draft assumes that PGDP and PORTS will continue to enrich uranium for commercial nuclear power use.
  - — The Discussion Draft excludes several Oak Ridge facilities included in the BEMR (i.e., Oak Ridge decommissioning of waste management facilities).
  - — The Discussion Draft scope does not include the stabilization, deactivation, and decommissioning of approximately 120 facilities not currently in the EM program's scope.

ES.3 PATH FORWARD/SITE-SPECIFIC STRATEGIES

DOE-ORO has forged multiple strategies into a single, comprehensive plan in developing a path forward. Component strategies include the following:

- accelerating remedial action by using a watershed approach and maximizing use of existing characterization data; constructing an on-site waste management facility; deploying innovative technologies; and applying contain, consolidate, and control principles;
- reindustrializing to accomplish D&D;
- accelerating disposal of inventoried waste and minimizing treatment and handling steps, transitioning responsibility for managing newly generated wastes to the generator, and using private sector and other DOE site treatment and disposal capabilities;
- consolidating storage of SNF per the applicable Environmental Impact Statement;
- realizing efficiencies in the performance of the work (e.g., applying an M&I contract structure and reducing indirect and support costs); and
- limiting program scope to that currently residing within the EM Program.

ES.4 INTERSITE/INTERSTATE INTERACTIONS

Several opportunities for cost savings exist through integration of activities across all DOE sites in 23 states, and these are being considered as a part of the Discussion Draft. Existing resources—personnel, equipment, and technology—will be integrated throughout the DOE complex to ensure consistency and eliminate redundancies. This integration may be accomplished through several methods, including the formation of virtual centers, such as those created for environmental assessments. Oak Ridge is now working with various sites to identify future opportunities for integration.

ES.4.1 Capabilities Needed from Other DOE Facilities

Acceptance of SNF from Oak Ridge at Idaho National Engineering Laboratory and the Savannah River Site in Aiken, South Carolina, will reduce legacy costs for EM. Adherence to the national SNF Program Plan for fuel shipments is essential in budgeting and planning for all three sites.

Access and the ability to dispose of TRU waste at the Waste Isolation Pilot Plant and low-level waste at the Nevada Test Site and the Hanford Site are integral to accomplishment of the Discussion Draft.

ES.4.2 Oak Ridge Capabilities Available to Other DOE Facilities

The following Oak Ridge capabilities potentially could be made available to other DOE sites:

- Treatment of wastes from across the DOE complex using the existing TSCA incinerator in Oak Ridge will result in accelerated compliance schedules, lower unit treatment costs, and optimal use of DOE assets. These wastes include PCB–contaminated oils, spent solvents, and contaminated (chemically and radioactively) personal protective equipment.
- Oak Ridge has been selected as the lead site for the National Scrap Metal Reuse/Recycle Program and will play a major role in reducing waste dispositioning costs across the DOE complex. Commitment by other DOE sites to supply scrap metal and use the finished products is key to the success of the program.

Oak Ridge is proposing to coordinate waste treatment and disposal contracts, such as the Oak Ridge Broad Spectrum Procurement, throughout the DOE complex.

ES.5 STAKEHOLDER INVOLVEMENT

The Discussion Draft is the culmination of a comprehensive, integrated planning effort to complete the ORO EM mission and includes input from the regulators and other stakeholders. An aggressive, interactive stakeholder involvement program for the Discussion Draft is ongoing and will continue. Current dialogue with the stakeholders has focused on understanding the assumptions and clear articulation of stakeholders' concerns. Stakeholders have identified specific concerns with some Discussion Draft assumptions. Areas of concern include the extent to which institutional controls would be used, the receipt of out-of-state wastes for treatment in Oak Ridge, the on-site disposal of wastes produced from remedial actions in Oak Ridge, the end-state use of the ORR, and the reliance on source control and containment in lieu of removal. The stakeholder involvement process for DOE-ORO is illustrated in Fig. ES.4.

This Discussion Draft is to be distributed to interested parties to elicit their comments on the goals and strategies of the 2006 Vision. In particular, DOE-ORO wishes to obtain the viewpoints of its stakeholders on strategic approaches for accomplishing compliance and completion goals and on whether the Discussion Draft articulates the right management strategies to accomplish those goals. This approach will ensure that DOE-ORO has a broad perspective when developing the Discussion Draft later this year. DOE-ORO will develop the Initial 2006 Plan by early 1998, after a second comment period. The Discussion Draft will be a living document, evolving to reflect revised assumptions, viewpoints expressed by the stakeholders, and newly obtained information.

DOE-ORO is requesting public comments on the Discussion Draft over a 90-day period. The public comment period for the National and Site Discussion Drafts will end September 9, 1997. DOE-ORO is also planning a series of meetings with stakeholders and regulators to discuss the impacts of the Discussion Draft.

EM, in a parallel effort, has requested that sites involve stakeholders in formulating the FY99 budget, which is being developed concurrently with the Discussion Draft. In July, EM will hold a national feedback session to discuss the its national FY99 budget. The options and alternatives described in the Discussion Draft and future iterations of the 2006 Plan will affect budget formulation

and execution activities. This planning process will allow EM to develop annual budgets in the context of long-term objectives.

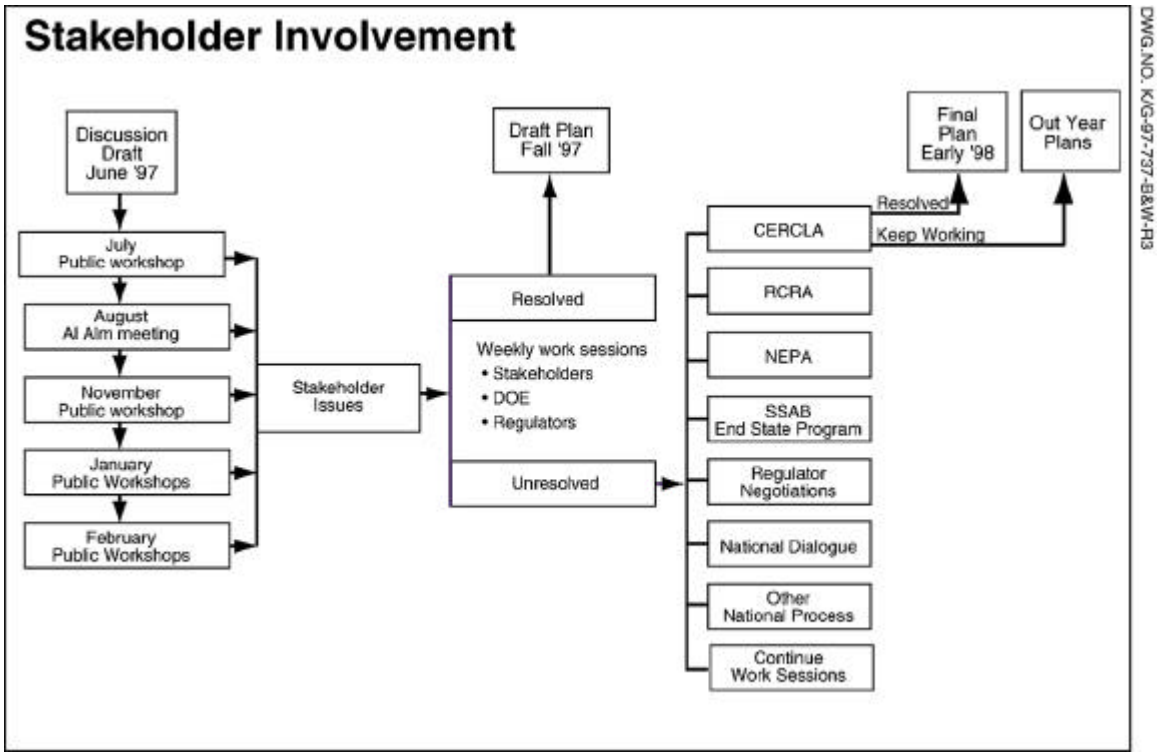

Fig. ES.4. Stakeholder involvement process.